

REMARKS

1. Claim Objections

The informality concerning claim 7 noted by the Examiner has been corrected by the amendment of claim 7.

2. First Section 103 Rejection

Claims 1-9 and 12-16 have been rejected as being obvious over U.S. 4,867,861 to Abdo et al. Reconsideration and withdrawal of this rejection are respectfully requested in view of the following arguments.

The Examiner mentions that the Abdo patent fails to disclose the catalytic dewaxing of an oil feed having the sulfur and nitrogen concentrations recited in Applicants' claims, and she further indicates that the Abdo patent fails to disclose the retrofitting of a lube base stock process by the replacement of an existing dewaxing step with a catalytic dewaxing step as recited in Applicants' claims. The Examiner, however, argues that the Abdo patent renders Applicants' claimed invention obvious because, allegedly, "shale oil feeds are known to contain appreciable amounts of sulfur and/or nitrogen"; and, because, allegedly, it is obvious to replace a solvent dewaxing step of a lube base oil process with a catalytic dewaxing step; since, they both are known to be effective for producing lube base stock. Applicants suggest, however, that the claimed invention is indeed unobvious over the Abdo patent in view of the following comments.

It is particularly significant that Applicants' invention is a process for catalytically dewaxing an oil feed, having a high sulfur concentration, by using a catalyst that unexpectedly shows a reduced rate of deactivation relative to comparative dewaxing catalysts when processing such a sulfur loaded feed. See, specification at page 15, lines 7-10; page 17, lines 10-15; page 18, line 6 – page 19, line 2; page 19, lines 7 – 12; and page 23, lines 6 – 9. The Abdo patent, on the other hand, does not address or even recognize the problem associated with instability of a dewaxing catalyst when used in the processing of oil feed having a high sulfur concentration.

It is further noted that the Abdo patent focuses on the processing, preferably, of a shale oil or shale oil fraction that has already been hydrotreated (see, column 3, lines 60 – 65)

using the required combination of an intermediate pore crystalline molecular sieve and a large pore crystalline molecular sieve (see, column 4, lines 55-65; column 10, line 52 – column 11, line 2; column 12, line 7 – 11, 38-42) to provide a high yield of lube oil having good physical properties. See, column 12, lines 11-29. While the Abdo patent teaches the necessary combination of the two types of zeolites, Applicants' invention does not require the use of more than one type of zeolite.

Considering the above-discussed differences between Applicants' invention and the teachings of the Abdo reference, and that the Examiner has not cited any secondary references to supply the missing claim limitations that are admittedly not disclosed by the Abdo patent, it is respectfully submitted that claims 1-9 and 12-16 are unobvious over the Abdo patent.

### 3. Second Section 103 Rejection

Claims 1-9,12-14, and 16 have been rejected as being obvious over U.S. 6,287,454 to Forbus, Jr. et al. in view of U.S. 5,080,878 to Bowes et al. Reconsideration and withdrawal of this rejection are respectfully requested in view of the following arguments.

The Examiner states that the Forbus patent discloses a dewaxing catalyst that contains a zeolite, a Group VIII metal and a silica matrix, and she further states that the Forbus patent succeeds at disclosing the employment in a dewaxing process of a catalyst having components corresponding to those recited in Applicants' claims. The Examiner argues that it is obvious to apply the teachings of the Bowes patent concerning the dealumination of a zeolite to modify the catalyst disclosed in the Forbus patent so as to provide Applicants' claimed invention.

Applicants, however, respectfully assert that the dewaxing catalyst taught by the Forbus patent is not the same catalyst as is claimed by Applicants even if modified as suggested by the Examiner; in that, Forbus teaches, contrary to the Examiner's suggestion, the necessary exclusion of a metal hydrogenation component from a zeolite based dewaxing catalyst. See, Column 3, lines 14-17; Column 7, lines 10-16, and 30-34; Column 15, lines 16-20. Applicants' claimed invention, on the other hand, requires the use of a dewaxing catalyst that includes a Group VIII metal hydrogenation component. Considering that Forbus teaches the necessary exclusion of a Group VIII metal component from its catalyst, the modification of the Forbus taught catalyst by applying the dealumination disclosed by Bowes would not provide the catalyst

recited in Applicants' claims. The modified Forbus catalyst will still exclude the presence of a Group VIII metal hydrogenation component. Thus, the combination of the references fails to disclose all the limitations of Applicants' claimed invention.

Moreover, as noted above, it is particularly significant that Applicants' claimed invention allows for the catalytic dewaxing of an oil feed that has a high sulfur and/or nitrogen concentration with an improvement in the catalyst deactivation rate compared to the use of dewaxing catalysts that contain only untreated zeolite. See, specification at page 15, lines 7-10; page 17, lines 10-15; page 18, line 6 – page 19, line 2; page 19, lines 7 – 12; and page 23, lines 6 – 9. There is no suggestion of this result in the Forbus and Bowes references.

It is therefore respectfully submitted that claims 1-9, 12-14, and 16 are unobvious over the combination of the Forbus and Bowes references.

#### 4. Third Section 103 Rejection

Claims 1-11,13-14, and 16 have been rejected as being obvious over U.S. 5,332,490 to Taylor, Jr. et al. in view of U.S. 5,080,878 to Bowes et al. Reconsideration and withdrawal of this rejection are respectfully requested in view of the following arguments.

The Examiner indicates that the Taylor patent fails to disclose the use in the dewaxing treatment of an oil feed having a high sulfur and/or nitrogen concentration of a catalyst that includes a zeolite that has not been dealuminated. But, she asserts that it is obvious to combine the teachings of the Bowes patent with those of Taylor patent to supply the missing dealumination that is required by Applicants' claims. The Examiner also presents the unsupported statement that it is obvious to treat oil feed having Applicants' recited sulfur and nitrogen concentration ranges.

Applicants respectfully assert that there is nothing in either the Taylor or the Bowes patent suggesting their combination in order to provide a process for dewaxing an oil feed having a high sulfur and/or nitrogen concentration when such process uses a catalyst containing a dealuminated zeolite that provides for a higher stability when used to dewax such an oil feed as compared to other dewaxing processes that use dewaxing catalysts containing zeolites that are not dealuminated. Again, as noted above, Applicants' specification shows the unexpected benefits in the processing of oil feed containing a high concentration of sulfur and/or nitrogen

from using a catalyst containing a dealuminated zeolite when compared to the use of a catalyst containing an untreated zeolite. *See*, specification at page 15, lines 7-10; page 17, lines 10-15; page 18, line 6 – page 19, line 2; page 19, lines 7 – 12; and page 23, lines 6 – 9.

Considering, that it is unexpected for Applicants' particularly recited dewaxing catalyst to be more stable in the dewaxing processing of the particularly defined feed stock than the catalyst described in the Taylor patent; and, further considering, that there is no disclosure in either of the references of the processing of a feed stock having a high sulfur and/or nitrogen concentration; and, further considering, that there is no suggestion in the references that they may be combined in such a manner as to provide the unexpected benefits noted by the Applicants in their specification, it is clear that claims 1-11, 13-14 and 16 are patentable over the combined teachings of the Taylor and Bowes patents.

### 5. Conclusion

In view of the above remarks, it is respectfully asserted that claims 1-16 pending in this application are patentable over the cited prior art and early allowance is hereby requested.

Respectfully submitted,

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